ProLiant Essentials Intelligent Networking – Fast Path Failover in Microsoft® Windows® environments

white paper

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Abstract

This paper describes the Fast Path Failover feature of the HP ProLiant Essentials Intelligent Networking Pack and explains how this feature can enhance the functionality of a network that includes HP ProLiant servers. This paper is intended for IT professionals familiar with ProLiant network adapter teaming. For readers who are not already familiar with this technology, it is described in the white paper "HP ProLiant Network Adapter Teaming," which is available at this URL:
http://h18004.www1.hp.com/products/servers/networking/whitepapers.html.

Introduction

The ProLiant Essentials Intelligent Networking Pack (INP) is an innovative networking product designed and developed by HP. INP enables ProLiant servers that are running basic ProLiant teaming software to adapt to and change the network path to achieve maximum reliability and performance. INP can monitor and analyze network conditions and redirect traffic to the optimum path.

To illustrate, Table 1 identifies several common causes of network disruption and the affect of the disruption in a computing environment without INP: loss of client access to applications. If INP is installed in the environment when any of these problems arise, however, most or all clients retain access to business-critical applications on the server.

Table 1. Common causes of network disruption

Possible Network connectivity problem	Result without Intelligent Networking Pack
Cable between the first tier switch and the core network becomes unplugged.	Clients lose access to business-critical applications on the server because the path is blocked.
Server has ports configured for a virtual LAN (VLAN), but second tier switch has been incorrectly configured in support of the VLAN.	Clients lose access to business-critical applications because the switch cannot route traffic to the VLAN on the server.
A switch in the path to the core network crashes, experiences a firmware malfunction, or is removed for maintenance.	Clients lose access to business-critical applications because the path is unavailable, or the alternate path is very slow.
A port or a fiber connector (GBIC) beyond the second tier switch fails.	Clients lose access to business-critical applications because the path is unavailable.

INP includes these features:
- Fast Path Failover — Allows a ProLiant server to use the quickest available path to the core network for all server traffic.
- Active Path Failover[1] —Allows a ProLiant server to detect blocked paths and to redirect data along an unblocked path to the core network.
- Dual Channel Teaming[2] —Allows users to configure a team that spans two switches and supports receive and transmit load balancing by means of Switch-assisted Load Balancing (SLB) teams.

This paper describes the Fast Path Failover feature of the INP.

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[1] For a similar white paper describing ProLiant Essentials Intelligent Networking – Active Path Failover, see
http://h18004.www1.hp.com/products/servers/networking/whitepapers.html .
[2] For a similar white paper describing ProLiant Essentials Intelligent Networking - Dual Channel Teaming, see
http://h18004.www1.hp.com/products/servers/networking/whitepapers.html .

# Benefits of Fast Path Failover

The Fast Path Failover feature of the Intelligent Networking Pack uses the failover capabilities of ProLiant NIC teams, allowing users to permit a failover triggered by the length and speed of the path from team member to the destination. For example, the primary port may experience a slowdown in its path to the core network. With Fast Path Failover, this slowdown triggers a failover to a backup port in the team that has a faster path to the core network. In this way, the server always sends network communications by the fastest path to the core network available.

How Fast Path Failover works

This section describes and illustrates how Fast Path Failover works in a typical business configuration and network failover scenario.

In Figure 1, the network has configured for load balancing in order to use all ports, regardless of speed. Note that the ports are Gigabit speed to each switch, but the redundant link between the switches exists over a Fast Ethernet 100 Mbps line. Network traffic flows to and from the core at Gigabit speed.

Figure 1. Redundancy configuration
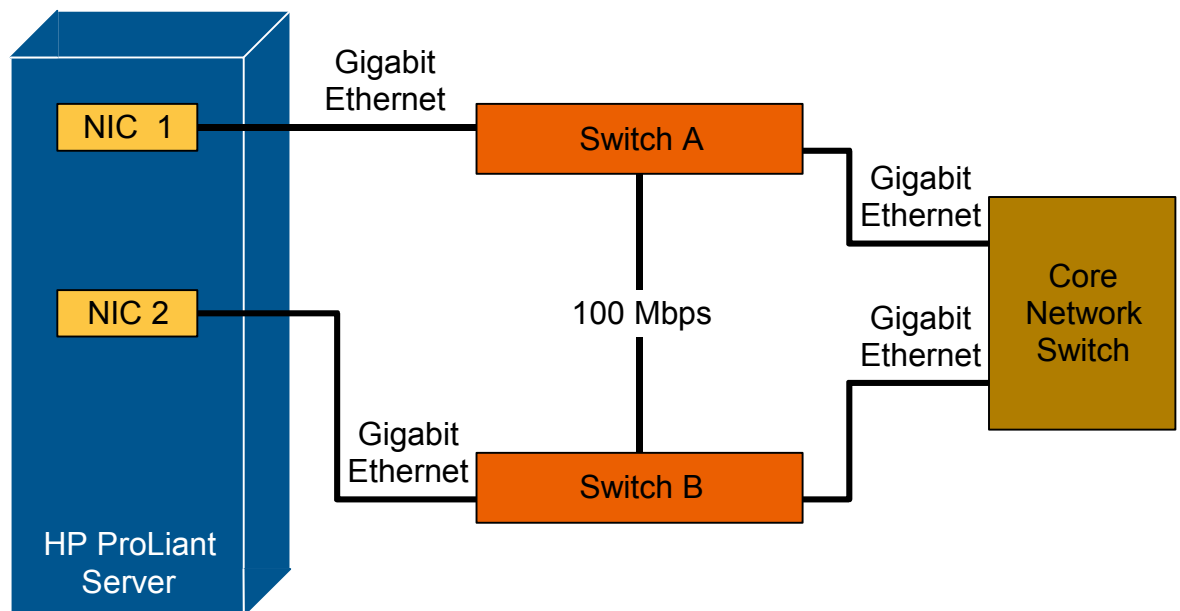
In Figure 2, a failure from Switch A to the network core causes traffic to be rerouted through a 100-Mbps path. Without HP Intelligent Networking software, traffic from the primary port slows to 100 Mb, and clients experience wait times.

Figure 2. Network slowdown without INP installed
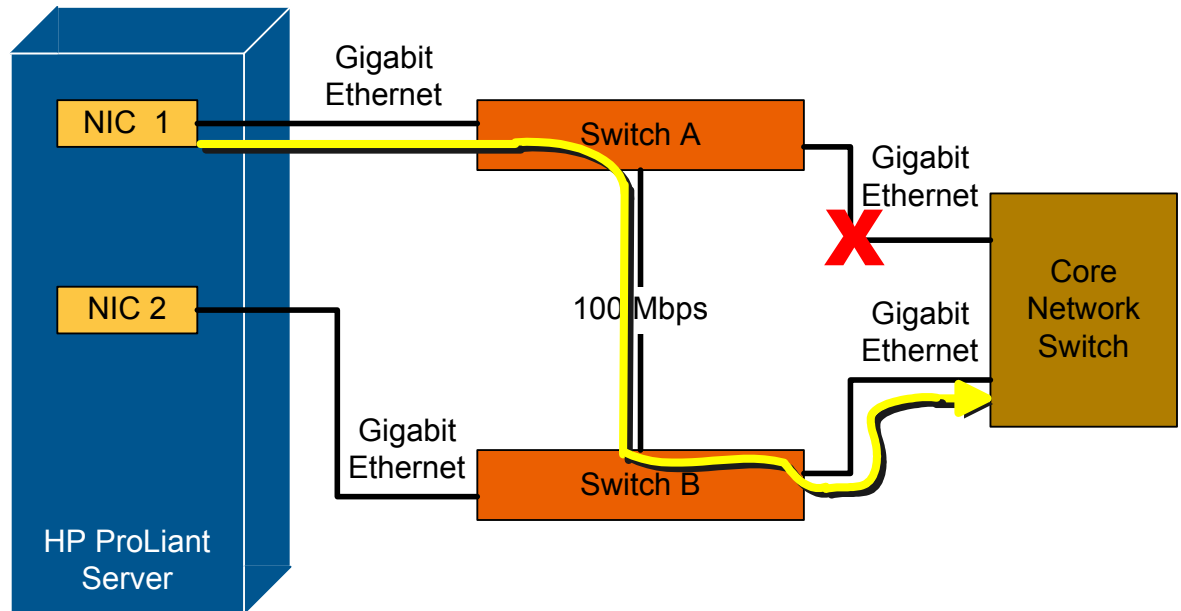
In Figure 3, the Fast Path Failover feature of Intelligent Networking causes the backup port in the NIC team to take over as primary, and the server uses the fastest path to the network core. Network traffic flows to and from the core at Gigabit speeds, and client wait time is negligible. The failed hardware can be replaced without affecting server traffic.

Figure 3. With the INP Fast Path Failover feature, the server uses the fastest path to the network core.
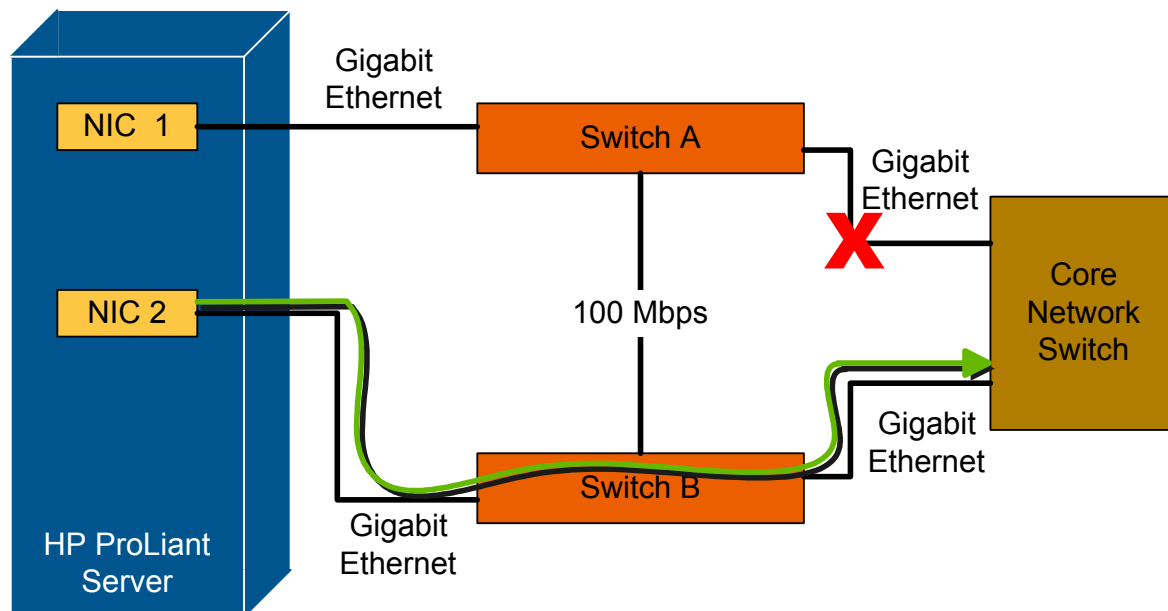
Setting up Fast Path Failover

Configuring a ProLiant NIC team to use Fast Path Failover is simple by means of the familiar Network Configuration Utility used to set up network teaming. It simply requires completing these steps:

1. Open the Network Configuration Utility by clicking the tray icon.
2. Display the properties for the NIC team.
3. Select the Advanced Redundancy tab (Figure 4).
4. Select the Fast Path Failover option.
5. If you are configuring Fast Path Failover in addition to Active Path Failover, you can also select the priority for those failover events on the Advanced Redundancy tab. This priority indicates the preferred method for determining the new primary port in a failover situation.

For information about spanning-tree choices, see the documentation that came with your switch and the white paper titled "HP ProLiant Network Adapter Teaming," which is available online at http://h18004.www1.hp.com/products/servers/networking/whitepapers.html.

Note

The HP SmartStart Scripting Toolkit can also be used to configure a ProLiant NIC team for Fast Path Failover.

Figure 4. Using the Network Configuration Utility to set up Fast Path Failover functionality
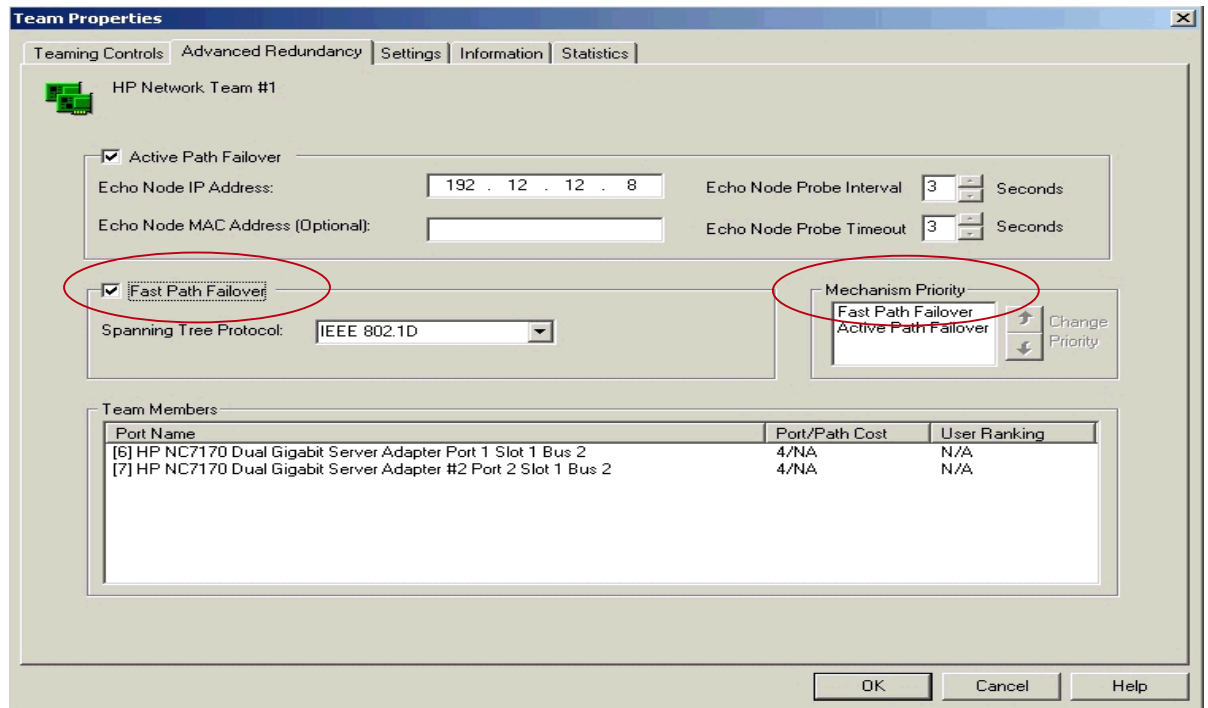
Conclusion

As part of the ProLiant Intelligent Networking Pack, Fast Path Failover offers an additional option to help ProLiant servers adapt to network conditions. Fast Path Failover enables ProLiant servers to detect network delays in the path to the core network and reroute traffic for optimum performance.

For more information

For more information and other white papers about HP ProLiant network adapters, go to this web page: http://h18004.www1.hp.com/products/servers/networking/whitepapers.html

For information about how to purchase an HP ProLiant Essential Intelligent Networking Pack license, go to the HP website at
http://h18004.www1.hp.com/products/servers/proliantessentials/inp/index.html or contact your HP reseller.

TC041104WP, 11/2004